

# AGENDA

## Energy Efficiency and Renewable Energy Potential Study Advisory Committee Meeting

Date: Monday, November 1, 2004  
Time: 3:00 pm – 5:00 pm  
Location: Energy Center of Wisconsin  
455 Science Drive, Suite 200  
Madison, Wisconsin  
(608) 238-4601

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Agenda Item	Duration	Time	Action
Introductions and Meeting Objectives/Agenda	10 minutes	3:00 – 3:10	Identify additional agenda items if any
Overview of proposed methodology (Energy Center)	20 minutes	3:10 – 3:30	
Review list of possible additions to scope (Energy Center and Meier Engineering)	20 minutes	3:30 – 3:50	
Discussion of methodology and scope	60 minutes	3:50-4:50	Identify and vote on: (1) changes to methodology, (2) additions/deletions to scope
Identify next steps	10 minutes	4:50 – 5:00	
Adjourn		5:00	

The logo for the Energy Center of Wisconsin is located in the upper left quadrant of the slide. It features a red circle with several concentric white circles around it. Four yellow arrows point outwards from the top of the red circle. The text "ENERGY CENTER OF WISCONSIN" is written in white, uppercase letters across the middle of the red circle.

ENERGY CENTER OF WISCONSIN

# **Achievable Energy Efficiency and Renewable Energy Potential in Wisconsin**

**Methodology Review Meeting  
November 1, 2004**

YOUR PARTNERS IN ENERGY RESEARCH, EDUCATION & CONSULTING

# Meeting Purpose

- Review and/or modify methodology, scope, options, and budget
- Confirm or modify markets to include in study
- Plan next steps
  - *Stakeholders meetings*
  - *Advisory Committee meetings*
  - *Coordination with Focus on Energy market assessment*

# Overview of Methodology

- Oriented around markets and program approaches
- Assessment of net, program-induced impacts
- Explicit analysis of uncertainty
- Output: supply curves

# Scope --- Markets

Commercial	1.	New constr. (components)
	2.	New constr. (integrated)
	3.	Pkg. HVAC purchase
	4.	Commercial Boiler replacement
	5.	Space alterations
	6.	Lighting & controls (large commercial/education/government)
	7.	Chiller system improvements
	8.	Small HVAC system maint.
Industrial	9.	Supermarket & pkg. refrigeration
	10.	Compressed air system optimization
	11.	Fan system optimization
	12.	Pump system optimization
	13.	Manufacturing process retrofits
Agricultural	14.	Water/wastewater operations
	15.	Ag. fans and pumps
Municipal		

[www.ecw.org](http://www.ecw.org)

Residential	16.	Home electronic appliance purchases
	17.	Retail lighting purchase
	18.	Rental common-area lighting purchase
	19.	Homeowner furnace replacement
	20.	Homeowner central AC purchase
	21.	Rental htg. System replacement
	22.	Retail room AC purchase
	23.	Homeowner water heater replacement
	24.	New construction, SF owner-occupied
	25.	Homeowner remodeling
Renewables	26.	1-4 unit rental bldg remodeling
	27.	5+ unit rental bldg renovation
	28.	1-4 unit rental bldg refr. purchase
	29.	Homeowner clothes washer purchase
	30.	5+ unit rental refrigerator purchase
	31.	Commercial PV
	32.	Wood and wood waste near plant
	33.	Commercial solar thermal
	34.	Rural comm/ag. wind generation
	35.	Farm anaerobic digesters
	36.	Homeowner solar DHW

# Suggested by stakeholders, but not included in list of 36...

- |             |     |  |
|-------------|-----|--|
| Renewables  | 1.  | Residential PV   |
|             | 2.  | Industrial wood combustion and co-firing               |
|             | 3.  | Renewables in new homes                                |
|             | 4.  | Commercial solar space heating                         |
| Residential | 5.  | Dehumidifiers in homes                                 |
|             | 6.  | Central AC rehab. or early retirement                  |
|             | 7.  | Rental property water heater replacement / fuel switch |
|             | 8.  | Rental property laundry room equipment purchase        |
|             | 9.  | 5+ unit rental new construction                        |
|             | 10. | 5+ unit rental hot water measures                      |
| C&I         | 11. | Lighting end-of-service replacement                    |
|             | 12. | Industrial motors end-of-service replacement           |

# Scope --- Geographic and time

- **Geographic:**

- **Statewide**
- **Optional disaggregation by utility**

- **Time:**

- **Cumulative 5-year, starting in 2006**
  - **Extrapolation of Year 5 through Year 10**

Program: Incentives for high-efficiency central AC  
 Units: air conditioners  
 Sector: residential



#### Per-Unit Impacts

Savings	Relative to existing		Relative to std. replacement	
	low	high	low	high
summer peak kW	0.2	0.3	0.1	0.2
annual kWh	500	800	100	200
annual therms	0	0	0	0
Modes (% of participants)	low	high	Installation Cost	
incremental upgrade	90%	95%	std. \$2,200	
retrofit	0%	0%	efficient \$2,700	
accel. repl. to std. eff.	0%	0%		
accel. repl. w/ eff. upgrade	5%	10%		

What savings will come from each upgraded unit?

#### Life

	low	high
measure life (years)	17	23
accelerated repl. (years)	1	5

How long will the impacts last?

#### Participation model

	low	high	Yr	Participation Limit	
	low	high		low	high
Annual market (units)	90,000	110,000	1	5,000	10,000
Maximum adoption rate:	60%	80%	2	10,000	25,000
Barriers:	low	moderate	3	25,000	50,000
Incentive (% of incr. cost):	20%	40%	4	50,000	90,000
			5	90,000	110,000

How many people will participate in the program?

#### Additional Market Effects (units)

	low	high
Year 1	0	500
Year 2	0	1,000
Year 3	0	2,000
Year 4	0	4,000
Year 5	0	8,000

What effects beyond immediate participants might the program have?

#### Program Costs

	low	high
fixed, annual	\$100,000	\$200,000
per unit (non-incentive)	\$25	\$50

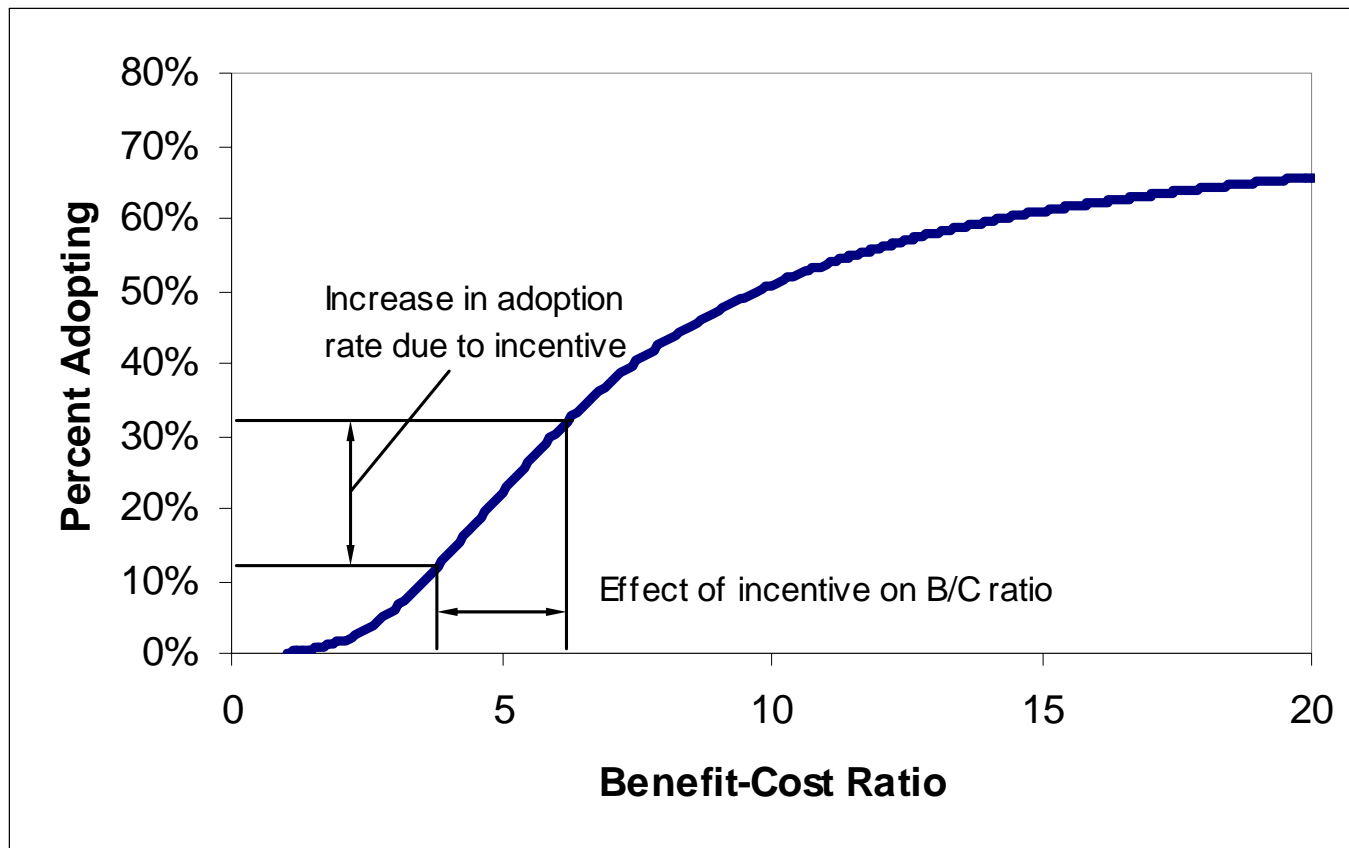
How much will the program cost?



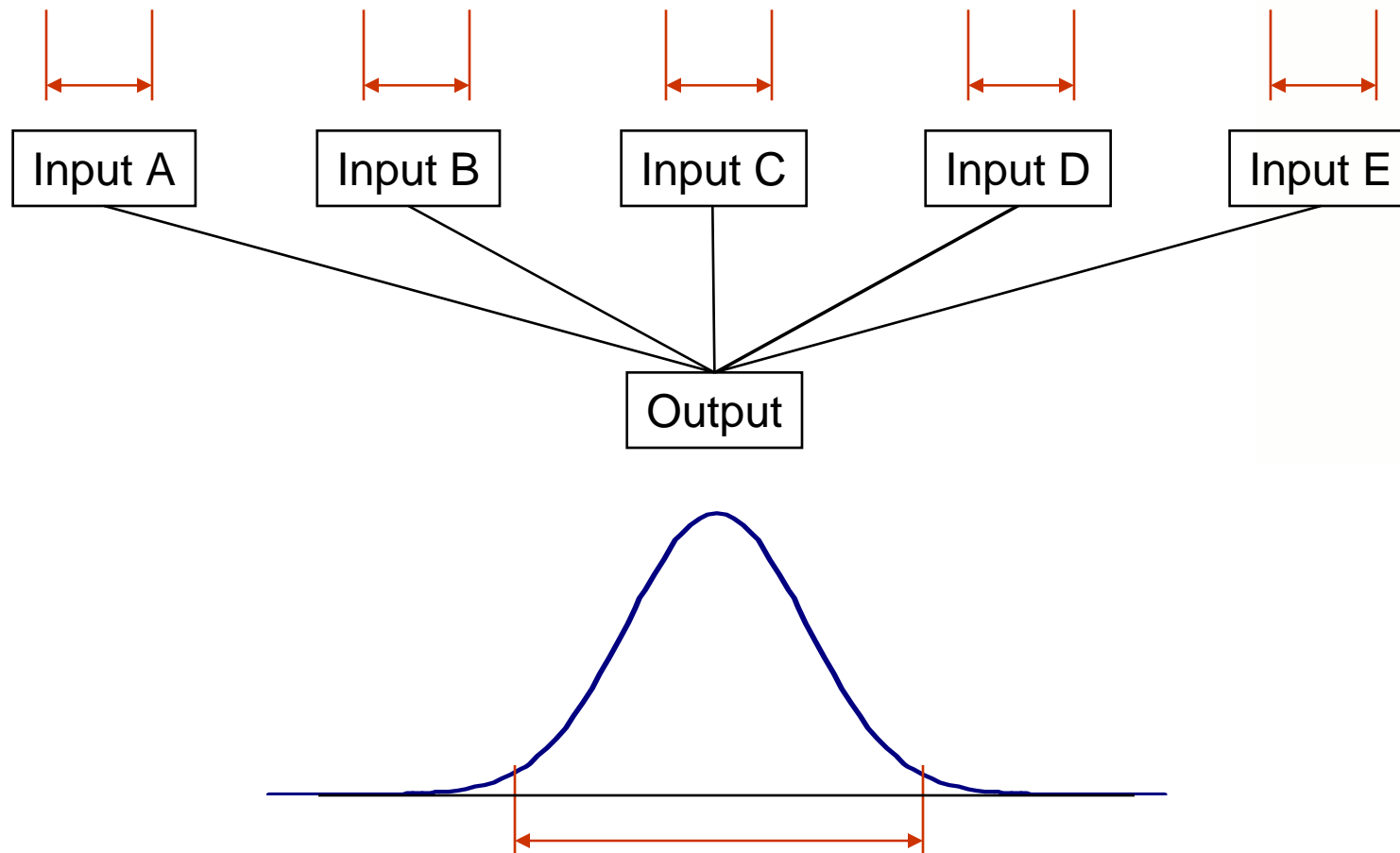
# Data Sources

- Previous utility potential studies
- Focus market research and evaluations
- Energy Center research
- Series of open meetings to discuss markets and program approaches
- Other sources

# Model participation

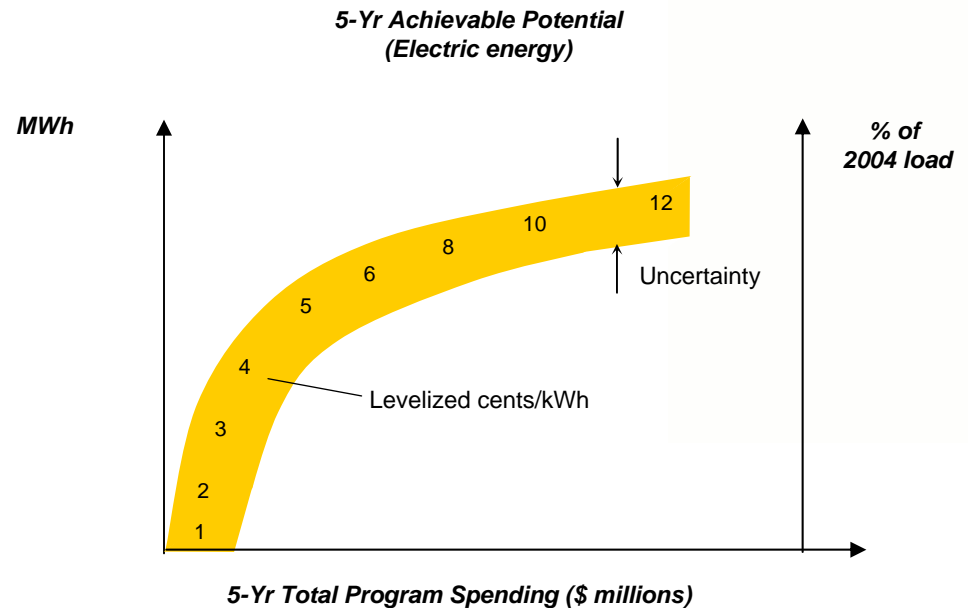


# Propagate Uncertainty



# Output: Supply Curves

- 2 optimizations
  - Individual resource
  - Overall benefit/cost



# Possible scope additions

- 1. Disaggregate by utility service territory (\$35,000)**
- 2. Incorporate additional markets (\$9,000 each; \$3,500 to screen and rank)**
- 3. Scenario optimization (\$20,000)**
- 4. Integrate with FIDO (\$75,000+)**